We claim:

1) a multiple beam RF device comprising:

a housing having a central Z axis, said housing enclosing a plurality of electron beam tunnels, each said beam tunnel having a conductive inner surface, and each said beam tunnel further comprising a sequence of drift tubes and drift tube gaps, said beam tunnels arranged about said central Z axis of said housing, and said housing including a plurality of apertures, one said aperture for each said electron beam tunnel;

a plurality of electron guns equal to said plurality of said electron beam tunnels, each said electron gun producing an electron beam passing uniquely through one of said electron beam tunnels;

a magnetic field applied to each said electron beam, said magnetic field having a variation of less than 5% over the extent of said electron beam tunnels;

each said electron gun having a cathode for the generation of electrons, an anode for the acceleration of said electrons, and a focus electrode for the focusing of said electron beams.

2) The RF device of claim 1 wherein said beam tunnels are arranged substantially parallel to said central Z axis.

3) The RF device of claim 2 wherein RF energy may be introduced in at least one of said drift tube gaps, and RF energy may be removed from at least one of other said drift tube gaps.

4) The RF device of claim 3 wherein said housing is made from iron.

5) The RF device of claim 1 wherein said magnetic field is sufficient to achieve confined electron flow.

6) The RF device of claim 1 wherein said magnetic field produces a confining force which exceeds the space charge forces in said electron beam.

7) The RF device of claim 6 where the magnitude of said magnetic field is at least 2 times greater than said magnetic field required to balance said space charge force.

8) a multiple beam RF device comprising:

a housing having a central Z axis and an R plane orthogonal to said Z axis, said housing enclosing a plurality of electron beam tunnels, each said beam tunnel having a conductive inner surface, and each said beam tunnel further comprising a sequence of drift tubes and drift tube gaps, said beam tunnels arranged in said housing and parallel to said central axis Z of said housing, said

drift tubes having a minimum separation distance from said central axis Z of a separation distance D;

a plurality of electron guns, each said electron gun producing an electron beam passing through one of said electron beam tunnels;

a magnetic field applied to each said electron beam, said magnetic field having a field variation of less than 5% over the extent of said electron beam tunnels;

each said electron gun having a cathode for the generation of electrodes, an anode for the acceleration of said electrons, and a focus electrode for the focusing of said electron beams;

one or more magnetic field correctors.

9) The RF device of claim 8 wherein said magnetic field corrector comprises a coil, and said extent of said coil is less than said separation distance D.

10) The RF device of claim 8 wherein said field corrector comprises a single coil and said extent of said coil is greater than said separation distance D.

11) The RF device of claim 8 wherein said field corrector comprises a first coil with an extent less than said separation distance D, and a second coil with an extent greater than said separation distance D.

12) The RF device of claim 8 wherein said field corrector comprises a coil of current-carrying wire which produces said correction field.

13) The RF device of claim 8 wherein said field corrector comprises a permanent magnet.

14) The RF device of claim 8 wherein said field corrector comprises non-magnetized iron.

15) The RF device of claim 9,10,11, or 12 wherein said coil comprises a coil of current-carrying wire which produces said correction field.

16) The RF device of claim 9, 10, 11, or 12 wherein said field corrector comprises a permanent magnet.

17) The RF device of claim 9, 10, 11, or 12, wherein said corrector comprises non-magnetized iron.

18) The RF device of claim 9, 10, 11, or 12, wherein at least one of said correction coils comprises a coil of current-carrying wire which produces said correction field.

19) The RF device of claim 9, 10, 11, or 12, wherein at least one of said correction coils comprises a permanent magnet.

20) The RF device of claim 9, 10, 11, or 12, wherein at least one of said correctors comprises non-magnetized iron.

21) The RF device of claim 8, wherein said field corrector is located on the main axis of said device, said field corrector has a near end in proximity to said housing and intersecting said central Z axis, and a far end opposite said near end, said field corrector comprising a radially symmetric magnetic cylinder, said field corrector having a radius which is smaller on said near end, and larger at any point near said far end.

22) The RF device of claim 21, said field corrector further including an electromagnetic coil on said smaller radius.

23) The RF device of claim 21 or 22, said field corrector further including field correcting cutouts around said plurality of electron guns.

24) The RF device of claim 8 wherein said field corrector provides a magnetic field such that equipotential flux lines formed by said magnetic field when modified by said field corrector are substantially parallel to said electron beam tunnels.

25) The RF device of claim 1 or 8 wherein said RF device is an oscillator.

26) The RF device of claim 1 or 8 wherein said RF device is an amplifier.